

**ABSTRACT**

A sensor device for detecting a change in the level of fluid within tissue of a body includes: a housing having a plurality of bridge segments, the bridge segments connecting at intersections and being arranged to circumscribe an opening defined by the housing; and a plurality of antenna elements at least partially seated within the housing at intersections of the bridge segments. Each of the plurality of antenna elements includes a generally planar antenna mounted to a substrate material at a base of the planar antenna. An outer surface of the planar antenna faces away from the substrate. Each of the plurality of antenna elements further includes an electrical shield surrounding the substrate. A sensor for detecting a change in the level of fluid within tissue of a body including a first antenna pair includes a first transmitting antenna and a first receiving antenna. The first transmitting antenna is spaced from and connected to the first receiving antenna by a first bridging segment. The sensor further includes at least a second antenna pair including a second transmitting antenna and a second receiving antenna. The second transmitting antenna is spaced from and connected to the second receiving antenna by a second bridging segment. The first antenna pair and the second antenna pair are placed in spaced connection by a first spacing segment and a second spacing segment so that an open area is defined by the first antenna pair, the second antenna pair, the first spacing segment and the second spacing segment.